Example: Surface Area of a Pyramid

Problem:

Find the surface area of a pyramid with a square base. The square base is 12 inches by 12 inches and the height of the pyramid is 8 inches. Notice that we do not know the slant height.

Solution:

We are going to need the length of the slant height, so let's find that first.

Notice that the height of the figure, the slant height of the figure and half of the length of the side of the base make a right triangle. We can use the Pythagorean Theorem to find the slant height.

6 squared plus 8 squared equals s squared.

Simplify and solve this. The slant height is 10.

Now we can start finding the surface area. First we need to draw and label the surfaces of the figure.

The base is a square that is 12 by 12 and the four sides are triangles with base 12 and height 10.

Find the area of each of these surfaces.

The base is a square that is 12 by 12, so the area is 144.

The sides are triangles with base 12 and height 10, so the area of these are each 60.

To find the surface area, add the sides together.

This figure is made up of the square base and the four triangles. Be careful that you include all FOUR triangles.

The square is 144 and each of the triangles is 60, so the total surface area is 384.

As with all of the problems we have done, make sure you label your answer appropriately. The surface area of the pyramid is 384 inches squared.